



Key Stage 2

# Teacher Refresher - Vaccinations

Our immune system generally fights any harmful microbes that may enter our bodies. When we take good care of ourselves (e.g. getting plenty of rest and eating a balanced diet) we help our immune system work properly to prevent infection. Another means of helping our immune system is through vaccinations. Vaccines are used to prevent not treat infection.

A vaccine is usually made from weak or inactive versions of the same microbes that make us ill. In some cases, the vaccines are made from organisms which are similar to, but not exactly, the microbes that make us ill.

Most vaccines are injected into the body but the flu vaccine that is given to most children is a nasal spray. When the vaccine enters the body the immune system detects it and attacks it as if harmful microbes were attacking. White blood cells, a part of our immune system, create lots of antibodies to attach to specific markers on the surface of the vaccine organisms. These markers are called antigens. It takes our immune system around two weeks to learn about the vaccine organisms and while this is happening, we might feel a little tired. This is because the immune system is working hard to kill or eliminate all of the vaccine organisms. By successfully eliminating all the vaccine, the immune system remembers how to combat those microbes. The next time microbes carrying the same markers/ antigen enter the body the immune system is ready to fight it before it has a chance to make you ill. This means you develop immunity against diseases.

In some cases, the immune system needs reminding again, and this is why some vaccinations require booster jabs. Some microbes, like the flu, are tricky. They evolve so fast changing their markers/antigens. This means that the immune system can't remember how to fight them. For this reason, we have annual flu vaccinations. Herd immunity is a type of immunity which occurs when a portion of the population (or herd) has received a vaccination or has naturally acquired a particular infection, this provides protection to unvaccinated individuals.

## SW1 The Story of Edward Jenner

### Fill in the blanks:

Gloucestershire  
Science  
Doctor  
Smallpox  
Scarring  
Cowpox  
Milkmaid  
James Phipps  
Infected  
Scab  
Vaccinate

### Understanding:

What was the name of the doctor who discovered vaccinations?

Dr. Edward Jenner

What was the name of the deadly disease at the time?

Smallpox

What was Jenner's idea to stop the deadly disease?

Infecting people with a similar but relatively harmless infection to provide immunity – the earliest concept of vaccination.

What happened to James after he was infected with the cowpox?

He recovered quickly and developed immunity to cowpox

What happened to James when he was infected with the smallpox?

He had some scabs but did not develop smallpox

Why was it important for Jenner to test his idea on James before treating lots of children?

Smallpox was a very deadly disease and if it didn't work they may have all died

## SW2 Vaccine Quiz

Vaccines are used to:

- Prevent infections

By getting vaccinated you can:

- Protect yourself
- Protect people around you

How do vaccines work?

- The immune system attacks the vaccine and remembers for next time

Which diseases cannot be prevented by vaccination?

- Common cold
- Sore throat

Vaccines can be effective against

- Both bacterial and viral infections

Vaccines are made up of:

- Weak or inactive versions of the microbe that makes us ill

Herd immunity is:

- When enough of the population is vaccinated to prevent the spread of infections

Which diseases are eradicated or rare thanks to vaccinations?

- Smallpox
- Polio
- Tetanus